

CRICOTUS HETEROCLITUS Cope, Proceed. Acad. Phila. 1876, p. 405.

GENERAL OBSERVATIONS.

After an examination of the first fossils from this fauna which came under my observation, I left the question undecided as to whether its characters pointed to the Triassic or to Permian age. The *Reptilia* and a *Ceratodus* pointed to the former; the *Diplodus* pointed even to the coal measures. The additional evidence adduced in this paper, adds weight to both sides of the question. Of the fishes added, *Ctenodus* is a genus of the coal measures, and while *Strigilina* is new, its affinities are to the Petalodont genera of that formation. On the other hand the reptilian character of *Clepsydrops* is established, and the number of its species increased. Now the coal measures have nowhere disclosed reptilian remains, so far as we have determinations of a reliable character; *Batrachia* were the only type of air breathing vertebrata known to that epoch. The present fauna must then be placed above the coal measures, and the horizon will correspond more nearly with the Permian than with any other embraced in the system.

From its most characteristic fossil, the bed might be called the *Clepsydrops* shale. Its position, according to Dr. J. C. Winslow, is near the top of the Coal Measures, and it is marked No. 15, in Prof. F. H. Bradley's section of the Coal Measures of Vermillion Co., in the Report of the Geological Survey of Illinois by A. H. Worthen, Vol. IV, p. 245. It is about one hundred and eleven feet, averaging different localities, from the summit of the series, and 2099½ feet from the base. Two insignificant beds of coal occur above it, and the following genera of invertebrate fossils: *Productus*, *Spirifer*, *Athyris*, *Terebratula*, *Hemipronites*, *Retzia*, *Zeacrinus*, *Cyathaxonia*, *Discina*, *Lingula*, *Cardiomorpha*, *Orthoceras* and *Nautilus*. Several of these genera are found in the Zechstein, while others belong to the Coal Measures and below them.

On some new and little known Reptiles and Fishes from the Austroriparian Region.

BY E. D. COPE.

(Read before the American Philosophical Society, May 20, 1877.)

A number of interesting points in the distribution of our reptiles and fishes come to light from time to time, which serve to define with more precision the districts into which the Nearctic Realm is naturally divided.* The result of several of these, is to extend over the entire Austroriparian Region the range of several species heretofore supposed to be confined to portions of that district only. A collection formed at Kinston in Eastern North Carolina, in the North-eastern portion of the region in ques-

* See Bulletin No. 1 of the National Museum; Check List of North American Batrachia and Reptilia.

tion, by my friend, J. W. Milner, of the United States Fish Commission, is of considerable interest on this account. He found at that point the following species, which had not been previously known to occur east of Georgia or South Carolina:—Batrachia: *Manculus quadridigitatus*, *Bufo quercicus*, *Engystoma carolinense*. Reptilia: *Oligosoma laterale*, *Abastor erythrogrammus*. To this it may be added that Stephen G. Worth recently obtained near Fayetteville, North Carolina, the *Bascanium flagelliforme*, and the true *Hyla delitescens* of Holbrook. I here mention also that several years ago Dr. J. E. Holbrook sent me just before his death a colored drawing of a *Hyla* from S. E. Georgia, made by his friend Dr. Harden, which is probably the *H. carolinensis*, but which differs from the typical form of that species in having a white triangle on top of the muzzle, covering the space between its apex and a line connecting the anterior parts of the orbits, as in the *H. leucophyllata*. A specimen representing a variety of *Eumeces anthracinus* Baird, was sent me from Mobile by Dr. Jos. Corson.

The researches of the distinguished ornithologist, Robert Ridgway, into the natural history of South-eastern Illinois, have been followed by the same results as those of Mr. Milner in North Carolina. Mr. Ridgway has found in the Wabash valley as far North as Mount Carmel, Illinois, the following species: *Ancistrodon piscivorus*, *Carphophiops vermis*, *Haldea striatula*, *Abastor erythrogrammus*, *Furancia abacura*, *Coluber obsoletus confinis* and *Tropidonotus sipedon woodhousei*.

In a considerable collection from Volusia, Florida, several rare species occur. I give the entire list.

BATRACHIA.

<i>Siren lacertina</i> , L.	<i>Hyla gratiosa</i> , Lec.
<i>Pseudobranchius striatus</i> , Lec.	“ <i>carolinensis</i> , Daud.
<i>Amphiuma means</i> , Gard.	“ <i>femoralis</i> , Daud.,
<i>Engystoma carolinense</i> , Daud.	very common.
<i>Acris gryllus</i> , Lec.	<i>Rana halcina</i> Kaln.

REPTILIA.

<i>Crotalus adamanteus</i> , Beauv.
<i>Caulisoma miliaria</i> , L.
<i>Ancistrodon piscivorus</i> , Latr.
<i>Heterodon platyrhinus</i> , Latr.
<i>Tropidonotus fuscatus</i> , L.
<i>Eutania sackenii</i> , Kenn., very common.
“ <i>sirtalis</i> , L.
<i>Storeria occipitomaculata</i> , Holbr.
<i>Coluber quadrivittatus</i> , Say.
<i>Spilotes corais ercbennus</i> , Cope.
<i>Bascanium constrictor</i> , L.
“ <i>flagelliforme</i> , Catesb.
<i>Cyclophis esticus</i> , L., abundant.
<i>Pityophis melanoleurus</i> , Holbr.

Dromicus flavilatus, Cope. The second specimen of this very rare species, comes from Volusia. The first was found by Dr. H. C. Yarrow, near Fort Macon, North Carolina.

Oseola elapsoidea, Holbr.

Contia pygmaea, Cope. So far as yet known, found only near Volusia.

Cemophora coccinea, Blum., common.

Tantilla coronata, B. & G.

Rhineura floridana, Baird, abundant.

Oligosoma laterale, Say.

Eumeces striatus, L.

Cnemidophorus scolineatus, Say.

Sceloporus undulatus, Harl.

Anolis principalis, L.

Alligator mississippiensis.

A collection of fishes from the same locality includes a number of interesting species, as follows :

Notemigonus ischanus, Jordan, Check List Fishes Fresh W., N. A. p. 155.

A specimen eight inches in length with bright red dorsal, caudal and anal fins.

Arius ?equestris, Baird and Girard, U. S. and Mexican Boundary Surv. II p. 32.

Fine specimens of a species distinct from those of any other country from near Bayport, West Florida, agree in most of the characters cited by the above named authors. Their type was a young fish I suppose, in which the helmet had no such development as in my specimens; its beards are also rather longer.

Chirostoma beryllinum Cope, Trans. Amer. Phil. Soc. 1866, p. 403.

Prof. Jordan states that he has this fish from the St. John's R., Florida.

Haplochilus melanops Cope, Proc. Am. Philos. Soc. 1870, p. 457.

Chænobryttus gulosus C. V. *Centrarchus* C. V.

Radii; D. X-10; A. III-9. Depth of body entering total length 2.75 times.

Enneacanthus fasciatus Holbr. *Bryttus fasciatus* Holbr. Journ. Acad.

Phila. 1855, p. 51, Pl. 5, fig. 3.

Char. specif. General form elongate, as in some of the *Chænobrytti*. The depth enters the total length with caudal fin, 3.2 times, and the length of the head enters the same 3.4 times. The diameter of the eye is twice as long as the muzzle, and enters the head 3.2 times, and exceeds the interorbital width. The extremity of the maxillary bone marks the line of the anterior fourth of the orbit. The profile is a gentle convexity from the base of the first dorsal ray. Scales 6-34-13: four rows below the eye on the preoperculum; opercle scaled.

Color a rich brown, with numerous vertical darker bars descending from the base of the dorsal fin. Scales below the middle of the sides each with a brown dot; fins dusky, the dorsal and caudal with pellucid dots. Superior

angle of the operculum with a black spot without border, no radii on the cheek ; nose black.

Total length.....	.055
Length to dorsal fin (axial).....	.016
Length to anal fin (axial).....	.025
Length to caudal fin (axial).....	.044

Lepomis auritus Linn Jordan. *Ichthelis rubricauda* Holbrook.

Lepomis apiatus sp. nov.

A species of discoid form, possessing a well developed patch of teeth on the palatine bones. The gill rakers, although elongate on the anterior half of the first branchial arch are obtuse at their extremities ; they are quite robust, and become shorter on the inferior portion of the arch.

The depth of the body is contained in the total length (with caudal fin) 2.27 times, and the length of the head enters the same 3.3 times. The orbit is as wide as the length of the muzzle, and enters the length of the 4.25 times, and equals the inter-orbital width. The extremity of the maxillary bone reaches the vertical line marking the anterior two-fifths of the orbit.

The dorsal spines are robust and high, and are as long as the soft rays; The caudal fin is slightly emarginate. The ventral reaches the first and the pectoral the second anal spines. Radial formula ; D. X-11 ; A. III-10 ; P. 12. The opercular flap is short. Scale formula 6-44-12 ; six rows on the preoperculum below the eye. Opercle scaly.

Color, brown, dark above, lighter below. Each scale has a black spot at the base forming together longitudinal series ; these are less distinct on the superior half of the sides, and are obsolete in that region in large specimens. The spots are distinct on the opercular scales. Fins and muzzle black. Gill spot black, without border.

	M.
Total length.....	.168
Length to dorsal fin (axial).....	.052
“ ventral “ “052
“ anal “ “082
“ caudal “ “140

The external series of teeth are relatively larger in this species than in the *L. auritus* and *L. mystacalis*. No teeth on the tongue.

Lepomis mystacalis, sp. nov.

In this species the gill rakers are of the character indicated by Prof. Jordan as characteristic of the genus *Lepomis*, that is, slender and acute. This species also differs from the *L. apiatus* in the greater compression, and the shorter muzzle.

The greatest depth enters the total length (including caudal fin) 2.5 times, and the length of the head enters the same 4.4 times. The orbit is large, exceeding the length of the muzzle, equaling the interorbital space, and entering the length of the head 3.3 times. Radial formula ; D. X-12 ; A. III-12 ; P. 12. The dorsal spines are robust, but a little shorter than

the soft rays; the ventral fin reaches the first spine, and the pectoral the first soft ray of the anal fin. Caudal well notched. The maxillary extends a little beyond the anterior border of the orbit. Scale formula 7-51-15; four preopercular rows below orbit.

Color above dusky, sides silvery, with numerous short undulate vertical brown bars irregularly disposed. Opercular black spot short, without border; the dusky of the face is abruptly arrested by a pale band which extends backwards from the mouth to the preoperculum. A dark line from the chin bounds this below, and defines another silvery band which passes along the mandible, the interopercle and subopercle; cheeks, thorax, and posterior parts of the dorsal, caudal and anal fins yellow.

Xystroplites longimanus, gen. et. sp. nov.

Char. Gen. Inferior pharyngeal bones wide and robust, and paved with truncate grinding teeth. The gill rakers of the anterior half of the first branchial arch elongate; those of the posterior half and of the remaining gill arches, very short and obtuse. No supernumerary maxillary bone; operculum with a produced, entire superior posterior angle. No teeth on the tongue. Spines X. III.

This genus which has been just published by Prof. D. S. Jordan,* combines the grinding type of pharyngeal teeth characteristic of *Pomotis*, with the slender gill rakers recently shown by Prof. Jordan† to be characteristic of the genus *Lepomis*.

Char. Specif. Body elevated, but the head rather produced, so that the profile is oblique and nearly straight from the base of the dorsal fin. The depth of the body enters the total length 2.5 times, and the length of the head enters the same 3.6 times. The orbit is large, equaling the length of the muzzle, and entering the length of the head four times. The interorbital space is 1.5 times the diameter of the orbit. The muzzle is subconic, and the end of the maxillary bone reaches the line of the anterior margin of the orbit.

The dorsal fin is elevated, the spines equalling the soft rays and not separated from them by a notch. Caudal fin openly notched; ventral not reaching anal; the pectoral very long, reaching the line of the fifth anal soft ray. Formula; D. X-12; A. III-11; P. 13. Scale formula 7-44-15; five rows on the preoperculum below the orbit.

The color above is dusky, below silvery, the gular and thoracic region light yellow. The opercular black spot is short, and has a crimson border. Fins black, the caudal, anal and pectoral fins with yellow rays.

Total length.....	.170
Length to dorsal fin (axial).....	.047
" ventral " " 053
" anal " " 081
" caudal " " 131

* Prof. Jordan defined this genus in a paper written some time before this one, and which is probably already printed.

† Proceedings Academy, Philadelphia 1877, p. 76.

This fish has a superficial resemblance to the *Lepomis mystacalis*. The ends of the long gill-rakers are obtuse, as in the *L. apiatus*. There are no palatine teeth. It resembles also in form and coloration the *Pomotis microlophus*, Gthr. (*P. speciosus*, Holbr.) from the St. John's River, Florida, a species which I have not seen. According to Dr. Holbrook's figures and descriptions, there is a material difference in the radial formula which is, D. X .10; A. III .9. The form of the dorsal fin is also very different, the second being the higher, and separated from the first by a deep notch, which leaves one spine with the soft rays.

I have this species from near Volusia, and also from near Bayport on the West Coast.

Archirus mollis, De Kay.

Radii, D. 48; A. 35. Length without caudal fin .078; depth of body .042.

CONTRIBUTIONS FROM THE LABORATORY OF THE UNIVERSITY OF PENNSYLVANIA.

No. X.

Dichlorsalicylic Acid.

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(Read before the American Philosophical Society, June 15, 1877.)

As early as 1845, Cahours (Annalen der Chemie und Pharmacie—52. pp. 340 and 341) described a di-chlor acid which he obtained about the same time he was investigating the di-bromine substitution products of salicylic acid.

The course he pursued to produce the compound was to treat an aqueous solution of salicylic acid with an excess of chlorine. According to his description the acid thus obtained possesses great stability and can very readily be obtained pure.

And again by allowing a slow current of chlorine gas to stream through a dilute solution of potassium salicylate potassium dichlorsalicylate was formed. This salt after repeated recrystallization was obtained in almost colorless needles.

The acid corresponding to this salt was precipitated in white masses upon the addition of dilute hydrochloric acid to a solution of the latter. The acid is soluble in boiling alcohol, from which upon cooling, it separates in needles. Well formed octahedral crystals were secured by allowing a rather dilute solution to evaporate slowly in the air. Boiling water dissolves but small quantities of this acid, which separate out again in very fine needles when the solution becomes cool. Boiling concentrated nitric acid dissolves the compound, and when the liquid cools, beautiful yellow